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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,857

Applicant(s)

SAITO, KEN

Examiner

Thoi V. Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 ~~is/~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 ~~is/~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the Response filed May 30, 2006.

Currently, claims 1-14 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1, 2 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Katahira (US 2003/0063456 A1).

Re claim 1, as shown in Figs. 1 and 2, Katahira discloses a liquid crystal display device comprising:

a first liquid crystal display panel 110 having a main surface (lower surface of lower substrate);

a second liquid crystal display panel 130 having a main surface (upper surface of upper substrate) that is smaller than the main surface of the first liquid crystal display panel 110;

a light guide plate 122 having a first main surface (upper surface), a second main surface (lower surface) which faces the first main surface in an opposed manner, and a plurality of side surfaces; and

a light source 121 arranged to face one of the plurality of side surfaces of the light guide plate 122 and including at least one light emitting element, wherein

the liquid crystal display device is assembled such that the first liquid crystal display panel 110 is arranged to have the main surface thereof face the first main surface of the light guide plate 122,

the second liquid crystal display panel 130 is arranged to have the main surface thereof face a portion of the second main surface of the light guide plate 122, and

an uneven-surface structure 122b is provided to the second main surface of the light guide plate 122 (Fig. 2 and paragraph 64).

Re claim 2, the uneven-surface structure 122b operates to control the reflection of light which is propagated in the inside of the light guide plate on the second main surface (paragraph 64).

Re claim 6, as shown in Figs. 1 and 2, Katahira discloses a casing 150 (support frame) in which a first recessed portion for holding the first liquid crystal display panel

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110, the light guide plate 122 and the light source 120 is formed in one side (top side) of the casing, and a second recessed portion for holding the second liquid crystal display panel 130 and the light guide plate 142 is formed in another side (bottom side) of the casing which faces one side surface of the casing, an opening which allows the light radiated from the light guide plate 142 to irradiate the second liquid crystal display panel 130 is formed between the first recessed portion and the second recessed portion, and one portion (corresponding to the opening) on the second main surface 122b of the light guide plate 122 is defined as a portion which faces the opening of the second main surface 122b (page 5, paragraph 68 and see also Fig. 5).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-5 and 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katahira (US 2003/0063456 A1) in view of Kohara et al. (Kohara, USPN 6,633,722 B1).

Re claim 8, as shown in Figs. 1 and 2, Katahira discloses a liquid crystal display device comprising:

a first liquid crystal display panel 110 having a main surface (lower surface of lower substrate);

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a second liquid crystal display panel 130 having a main surface (upper surface of upper substrate) that is smaller than the main surface of the first liquid crystal display panel 110;

a light guide plate 122 having a first main surface (upper surface), a second main surface (lower surface) which faces the first main surface in an opposed manner, and a plurality of side surfaces; and

a light source 121 arranged to face one of the plurality of side surfaces of the light guide plate 122 and including at least one light emitting element, wherein

the liquid crystal display device is assembled such that the first liquid crystal display panel 110 is arranged to have the main surface thereof face the first main surface of the light guide plate 122,

the second liquid crystal display panel 130 is arranged to have the main surface thereof face a portion of the second main surface of the light guide plate 122, and

an uneven surface structure 122b is provided to the second main surface of the light guide plate 122 (Fig. 2 and paragraph 64).

However, as recited in claims 5 and 8, Katahira does not disclose that the uneven-surface structure is constituted of a plurality of grooves formed in the second main surface of the light guide plate.

As shown in Figs. 1 and 2, Kohara discloses a light guide plate 2 comprising grooves 22 formed in a lower surface of the light guide plate 2 for uniformly emitting the light introduced from a light source 4 (col. 15, lines 31-37).

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Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light guide plate of Katahira with the teaching of Kohara by forming grooves in the second main surface of the light guide plate in order to uniformly emitting the light introduced from the light source (col. 15, lines 31-37).

Re claim 13, as shown in Figs. 1 and 2, Katahira discloses a liquid crystal display device comprising:

- a first liquid crystal display panel 110 having a main surface (lower surface of lower substrate);

- a second liquid crystal display panel 130 having a main surface (upper surface of upper substrate) that is smaller than the main surface of the first liquid crystal display panel 110;

- a light guide plate 122 having a first main surface (upper surface), a second main surface (lower surface) which faces the first main surface in an opposed manner, and a plurality of side surfaces; and

- a light source 121 arranged to face one of the plurality of side surfaces of the light guide plate 122 and including at least one light emitting element, wherein

- the liquid crystal display device is assembled such that the first liquid crystal display panel 110 is arranged to have the main surface thereof face the first main surface of the light guide plate 122,

- the second liquid crystal display panel 130 is arranged to have the main surface thereof face a portion of the second main surface of the light guide plate 122, and

an uneven surface structure 122b is provided to the second main surface of the light guide plate 122 (Fig. 2 and paragraph 64).

Katahira discloses a liquid crystal display device that is basically the same as that recited in claims 3 and 13 except that at least one of the height and the depth of the uneven-surface structure with respect to the second main surface thereof and the density and the area in the inside of the second main surface differs between one portion of the second main surface and a peripheral portion close to said one portion.

As shown in Fig. 2, Kohara discloses a light guide plate 2 comprising a first main surface 2b and an uneven-surface structure 22 provided on a second main surface 2c, wherein at least one of the height and the depth of the uneven-surface structure 22 with respect to the second main surface 2c and the density and the area of the uneven-surface structure inside the second main surface of the light guide plate differs between one portion of the second main surface (middle portion) and a peripheral portion which is disposed close to said one portion in the light guide plate 2 (col. 15, lines 46-52).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the light guide plate of Katahira with the teaching of Kohara by having the uneven-surface configured such that at least one of the height and the depth with respect to the second main surface thereof and the density and the area in the inside of the second main surface differs between one portion of the second main surface and a peripheral portion close to said one portion for uniformly emitting the light introduced from the light source and attaining higher luminance (col. 15, lines 32-38 and col. 16, lines 22-28).

Re claim 4, as shown in Fig. 2, Kohara discloses, in the uneven-surface structure 22, at least one of the height or the depth with respect to the second main surface 2c of the light guide plate 2, the density and the area in the second main surface 2c of the light guide plate is increased corresponding to an increase of the distance from one side surface of the light source 4 of the light guide plate 2, and at least one of the height, the depth, the density and the area of the uneven-surface structure on one portion of the second main surface 2c (middle portion) of the light guide plate 2 is set larger than at least one of the height, the depth, the density and the area of the uneven-surface structure on a peripheral portion (close to the side surface 2a) close to the one portion along one side surface of the light guide plate 2 (col. 15, lines 46-52).

Re claim 7, according to Fig. 2 of Kohara, it is clear that, if the grooves 22 is formed at regular interval and regular depth, the reflectance of one portion (middle portion) on the second main surface 2c of the light guide plate 2 is higher than the reflectance of a peripheral portion close to said one portion along one side surface 2d of the light guide plate which faces the light source 4 in an opposed manner due to light leaking at the side surface 2d.

However, Katahira discloses that by providing the casing (support member), light leaking from the side surface can be enter the light guide plate again and light utilization efficiency can be enhanced (page 8, paragraph 92). Accordingly, it is obvious that the difference between reflectances due to light leaking is decreased by housing the light guide plate in the casing.

Re claim 9, as shown in Fig. 2, Kohara discloses a light guide plate 2 comprising a first main surface 2b and grooves 22 provided on a second main surface 2c, are configured such that the depths of the grooves are increased corresponding to an increase of the distance from the light source at least in a range from the light source to one portion (any portion) of the second main surface (col. 15, lines 47-53).

Re claim 10, as shown in Fig. 2 of Kohara, the grooves 22 formed in the second main surface 2c of the light guide plate 2 are configured such that the groove which is remotest from the light source has a depth larger than the depth of the groove which is arranged closest to the light source (col. 15, lines 47-53).

Re claim 11, as shown in Fig. 2 of Kohara, the grooves 22 formed in the second main surface 2c of the light guide plate 2 are configured such that the depth of the groove among the grooves in one portion of the second main surface which is arranged at a side more remote from the light source is larger than the depth of a neighboring groove in one portion of the second main surface of the light guide plate (col. 15, lines 47-53).

Re claims 12 and 14, as shown in Figs. 1 and 2, Katahira discloses a casing 150 (support frame) in which a first recessed portion for holding the first liquid crystal display panel 110, the light guide plate 122 and the light source 120 is formed in one side (top side) of the casing, and a second recessed portion for holding the second liquid crystal display panel 130 and the light guide plate 142 is formed in another side (bottom side) of the casing which faces one side surface of the casing, an opening which allows the light radiated from the light guide plate 142 to irradiate the second liquid crystal display

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panel 130 is formed between the first recessed portion and the second recessed portion, and one portion (corresponding to the opening) on the second main surface 122b of the light guide plate 122 is defined as a portion which faces the opening of the second main surface 122b (page 5, paragraph 68 and see also Fig. 5).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms, can be reached at (571) 272-1787.

Thoi V. Duong



7/27/2006